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XLIV.—On *Haliphysema ramulosa* (Bowerbank) and the *Sponge-spicules* of *Polytrema*. By H. J. CARTER, F.R.S. &c.

IN the last Number of the 'Annals,' p. 320, I have suggested that Dr. Bowerbank's *Haliphysema ramulosa* might be a branched form of *Squamulina scopula*, and then have submitted the question whether there might not be some connexion between the arborescent form of *Polytrema* and *H. ramulosa*, on account of the presence of sponge-spicules, stated by Dr. Carpenter (Introduct. Study of Foraminifera, p. 236) to apparently radiate from the extremities of the former.

I am now, through the kindness of my friends Dr. J. E. Gray and Dr. Carpenter respectively, enabled to answer these questions definitively.

In the first place, Prof. Oscar Schmidt has transmitted to Dr. Gray, for the British Museum, among many others, two slides bearing respectively specimens of *Haliphysema Tumanowiczii* and *H. ramulosa* (Bowerbank), Florida; and in the spiculiferous character of the extremities they closely resemble *Squamulina scopula*; but, in the absence of the "pedestal," and other points, it is not clear to me that they are identical in species with *S. scopula* and *S. varians* respectively.

Still, that there can be no doubt of the existence of a *dichotomously* branched species of the same kind of organism as *S. scopula*, Prof. Schmidt's mounted specimen testifies. Besides, this able naturalist promises, in a forthcoming notice, which is already printed, certain observations on the subject, showing that neither *Haliphysema Tumanowiczii* nor *H. ramulosa* can be sponges, although Prof. Schmidt is not at present prepared to state exactly what the real nature of these organisms may be.

Thus the branched form of *Haliphysema* (Bowerbank) is
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definitively shown to be no more a sponge than the simple or unbranched form, and will probably prove hereafter to be nothing more than a branched form of *Squamulina scopula*, as I at first suggested.

Although Prof. Schmidt had introduced the two species, and the figure of *H. Tumanowiczii*, in his excellent work on the Adriatic Sponges, on the authority of Dr. Bowerbank, it is not only fair to observe, but equally significant, that it will *not* be found in Dr. Gray's proposed "Arrangement of Sponges" (Proc. Zool. Soc. May 9, 1867). Dr. Gray doubted its asserted nature.

In the second instance, I have been provided by Dr. Carpenter with specimens of *Polytrema*, both simple and "arborescent," together with portions of the spiculiferous structure accompanying them, chiefly for examination of the latter; and the result of this I have found to be that, although *Polytrema* widely differs from *Squamulina scopula* and *S. varians* in its foraminiferous characters, still the heterogeneous mixture of sponge-spicules which enters more or less into the composition of their tests respectively appears to me to be the same.

While, however, the basis of the test in *S. scopula* and *S. varians* consists of an agglomeration of siliceous sand, that of *Polytrema* consists of calcareous matter secreted by the animal itself; and so far the basis-material of the tests differs; but sponge-spicules are alike present in that of *Polytrema*, as Schultze has already stated (ap. Prof. Allman, last No. of 'Annals,' p. 373), and in that of *Squamulina scopula* &c.

The spicules differ, of course, with the kinds of sponges growing in the locality from which they are supplied; and hence we do not expect to find exactly the same kinds of spicules in the *Haliphysema* from the Gulf of Florida that we find in *Squamulina scopula* of the British coasts; nor do we expect to find the same kinds of spicules in the specimens of *Polytrema* which were brought from the tropics by Mr. Denis Macdonald to Dr. Carpenter.

Thus in specimens of the spiculiferous structure taken from the latter, I have observed the pin-like, spinous, and sinuous spicules of *Cliona northumbrica*, fragments of the heads and shafts of very large trid spicules of a *Geodia* (?), together with a very preponderating number of the minute stellate spicules, and a few large ones like those of *Tethea lynceum*, a "dichotomo-patento-ternate" spicule of *Dactylocalyx Bowerbankii*, just like that figured in plate 2. fig. 53 of Bowerbank's 'Brit. Sponges,' and many other kinds, mixed together, but too numerous to mention individually.

In the fragments of spiculiferous structure given me for

examination by Dr. Carpenter, the above heterogeneous assemblage is found the minute stellate and smooth pin-like spicules preponderating. On the other hand, in and about some specimens of *Polytrema* on a crab-claw, which Dr. Carpenter also gave me, the preponderating spicule is club-shaped spinous, with anchorate spicules (of the kind mentioned hereafter), with the points, and *not* the heads, of the former projecting outwards—evidencing by this and their preponderance that the sponges which these two combinations respectively represent grew on the *Polytrema* accidentally, and not parasitically.

Of course, if *Polytrema* is in the habit of drawing to itself sponge-spicules, which, from the vast number of sponges always growing, dying, and disintegrating at the bottom of the sea, must be almost as plentiful as grains of sand there, it is not strange that the spicules which to-day are matted among its pseudopodia on its surface should, in a few days after, be found in the interior of its calcareous structure; and hence the presence more or less of sponge-spicules throughout the latter may be explained. Moreover, in addition to sponge-spicules, there are frustules of Diatomaceæ, fragments of minute Crustacea, and the minute, clathrous, calcareous bodies of the fleshy parts of Echinodermata,—in short, just as in *Squamulina*, almost any thing and every thing of this kind that may pass in its way. At the same time, the amount of spicules and their variety will vary in the structure of the test of *Polytrema* with the amount of sponges and their variety in the locality in which it may grow; and hence at one time there may be an excess and at another a comparative deficiency of spicules*.

Lastly, as regards the arborescent form of *Polytrema*, compared with Schmidt's *Haliphysema ramulosa* from Florida, the former is massive, extending here and there into short projections which may be termed pseudo-branches, while Schmidt's specimen is slender, dendritic, and *dichotomously* branched three times. For this species Schmidt has proposed, on his slide, the name of "*Lophalia affinis*," instead of "*Haliphysema*."

It seems also desirable that the spicules preponderating so excessively beyond all others on the specimens of *Polytrema* should be particularized, as they evidently belong to two distinct sponges, hitherto, apparently, undescribed.

That in the fragments taken from Mr. Macdonald's specimens of *Polytrema* by Dr. Carpenter presents a combination

* See also Gray on *Polytrema* in Proc. Zool. Soc. 1858, p. 270, and Ann. & Mag. Nat. Hist. 1858, vol. ii. p. 386; Max Schultze, Ann. & Mag. Nat. Hist. 1863, vol. xii. p. 409, and Gray, *ibid.* 1864, vol. xiii. p. 111.

of smooth pin-like spicules with ovate heads, mixed up plentifully with a mass of minute stellate spicules, each consisting of a globular body more or less covered with a variable number of radiating spines chiefly spinulous at the extremities, together with a few larger ones with smooth conical spines like that figured by Dr. Bowerbank (Brit. Sponges, vol. i. pl. vi. fig. 164) from "*Tethea Ingalli*, MS.," but not the same. This combination, together with the cartilaginous nature of the fragments, indicates a close alliance to *Tethea lyncurium*.

That of the other kind, which grows in a film over the specimens of *Polytrema* on the crab-claw, presents the following combination, viz.:—1, a club-shaped, thickly spinous spicule with the spines recurved or inclined towards the head; 2, a much longer, thin, smooth, cylindrical spicule, with abruptly pointed ends, one of which is occasionally oblong-capitate; and, 3, an anchorate spicule, tridentate, webbed, and "angulated," like that figured by Dr. Bowerbank (Brit. Spong. pl. vi. f. 143) as characteristic of *Spongia plumosa*, Montagu. This, again, is evidently one of Dr. Gray's *Esperiadæ* (*op. et loc. cit.*).

XLV.—*Notes on a Collection of Spiders made in Sicily in the Spring of 1868.* By E. PERCEVAL WRIGHT, M.D., F.L.S., Professor of Botany, Trinity College, Dublin. *With a List of the Species, and Descriptions of some new Species and of a new Genus,* by JOHN BLACKWALL, F.L.S.

[Plate VIII.]

CROSSING Mont Cenis on the last day of April 1868, I arrived in Florence on the evening of the 1st of May, and, proceeding *viâ* Lucca, Leghorn, and Rome, reached Naples about the 10th of May. Here I joined my kind friend A. H. Haliday, A.M., who had invited me to join him in a month's ramble upon the slopes of Etna. We had to wait until the 15th for Florio's steamer to Messina; but, the weather being very fine, the time was passed by us most pleasantly in wandering, now on the sides of Vesuvius (which at the time was in full eruption, belching forth steam mingled with stones, and ejecting more than one stream of brightly glowing lava), and again by the Lucrine Lake and at Baia. Arriving in Sicily, we spent one week collecting at and in the immediate neighbourhood of Messina, and a little more than a fortnight on the slopes of Etna. Catania was our headquarters; but a week was spent at Nicolosi, and it was here that the collection of spiders which